

LISTING OF THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A schottky device comprising;
a semiconductive substrate of a first conductivity type and a first concentration of dopants;
a semiconductive layer of said first conductivity type and a second concentration of dopants, said first concentration of dopants being higher than said second concentration of dopants;
a plurality of trenches extending to a depth inside said semiconductive layer, each of said trenches including opposing sidewalls and a bottom, and each being adjacent at least one mesa, each mesa being of said first conductivity only;
a first insulation layer of a first thickness on each sidewall of each of said trenches;
a second insulation layer of a second thickness on said bottom of each of said trenches, said second thickness being greater than said first thickness, said second insulation layer terminating at and extending along ~~each sidewall only for said second thickness~~ said bottom of each said trenches only, and said first insulation extending along the remainder of said sidewall;
an electrode disposed in each of said trenches;
a termination trench of the same depth as said plurality of trenches surrounding said plurality of said trenches, said termination trench including a bottom portion, and an inner sidewall, said inner sidewall being a sidewall of a mesa of only said first conductivity;
an insulation layer of a same thickness as a first insulation layer disposed on at least said inner sidewall of said termination trench, an electrode on said insulation layer disposed on at least said inner sidewall, and an insulation layer disposed on said bottom portion of said termination trench, said insulation layer on said bottom portion being thicker than said insulation layer on said inner sidewall of said trench;
a schottky barrier in schottky contact with said mesas;

a first electrical contact in contact with said schottky barrier, said electrodes in said trenches, and a surface of said electrode on said insulation layer opposite said inner sidewall of said termination trench; and

a second electrical contact in electrical contact with said semiconductive substrate.

2. (Original) A schottky device according to claim 1, wherein said first insulation layer is grown on each sidewall of each of said trenches, and said second insulation is grown on said bottom of each of said trenches.

Claim 3 (Canceled)

4. (Original) A schottky device according to claim 3, wherein said electrode is comprised of conductive polysilicon.

5. (Original) A schottky device according to claim 1, wherein said semiconductive layer and said semiconductive substrate are comprised of silicon.

6. (Original) A schottky device according to claim 1, wherein said semiconductive layer is an epitaxial layer.

Claims 7 - 8 (Canceled)

9. (Original) A schottky device according to claim 1, wherein said first insulation layer is between 500-750 Å.

10. (Original) A schottky device according to claim 1, wherein said second insulation layer is between 1000-5000 Å.

11. (Original) A schottky device according to claim 1, wherein said schottky barrier is comprised of one of platinum, platinum silicide and platinum tungsten.

12. (Original) A schottky device according to claim 1, wherein said first insulation layer is oxide that is grown on said sidewalls of each of said trenches, and said second insulation is oxide that is deposited at the bottom of each of said trenches.

13. (Currently Amended) A method for manufacturing a schottky device comprising:
providing a semiconductive body of one conductivity;
forming a plurality of trenches in said semiconductive body in a single step, each trench having opposing sidewalls, and a bottom, and each being adjacent a mesa, each mesa being of said one conductivity only;
forming an oxide layer on said sidewalls of said trenches;
covering said sidewalls of said trenches with an oxidation preventing layer;
forming an oxide layer at the bottom of each of said trenches, said oxide layer at said sidewalls of said trenches being thinner than said oxide layer at said bottom of said trenches; and
forming a schottky barrier layer in schottky contact with each of said mesas;
forming electrodes in each of said trenches;
forming a termination trench of a same depth as said plurality of trenches around said plurality of trenches, said termination trench including a sidewall, and a bottom surface, said sidewall of said termination trench being a sidewall of a mesa of only said one conductivity;
forming an oxide layer of a first thickness on said sidewall of said termination trench, and an oxide layer of a second thickness on said bottom surface, said second thickness being thicker than said first thickness, and said first thickness being the same thickness as said oxide layer on said sidewalls of said trenches;
forming an electrode on said oxide layer of said first thickness; and
forming a contact in contact with said schottky barrier layer, said electrodes in said trenches, and a surface of said electrode on said oxide layer of said first thickness opposite said inner sidewall of said termination trench.

Claims 14 - 16 (Canceled)

17. (Previously Presented) A method according claim 16, wherein said oxidation preventing layer and said another oxidation preventing layer are comprised of a nitride.

Claim 18 (Canceled)

19. (Original) A method according to claim 13, further comprising forming a termination trench around said plurality of trenches.

20. (Previously Presented) A method according to claim 16, further comprising forming an opening in said another oxidation preventing layer surrounding said plurality of openings and etching said semiconductive layer at the bottom of said opening surrounding said plurality of openings to form a termination trench.

21. (Original) A method according to claim 13, wherein said oxidation preventing layer is comprised of nitride.

22. (Currently Amended) A method according to claim 13, further comprising forming a layer of oxidation preventing layer over said sidewalls and said bottoms of said trenches and etching said oxidation preventing layer from said bottoms of said trenches to ~~achieve covering~~ cover said sidewalls of said trenches with an oxidation preventing layer.

23. (Original) A method according to claim 22, wherein said oxidation preventing layer is comprised of a nitride.